REMARKS

This responds to the Office Action mailed on 18 July 2006.

Claim 1-6, 14, 27, 42, and 51 are amended, no claims are canceled, and no claims are added; as a result, claims 1-61 are now pending in this application. The amendments to the claims are fully supported by the specification as originally filed. No new matter is introduced. Applicant respectfully requests reconsideration of the above-identified application in view of the amendments above and the remarks that follow.

The claims are amended to provide further clarity to these claims.

In the Specification

The specification is amended with the paragraphs beginning on page 2, line 1 – line 5, including the heading Summary of the Invention but before the heading Brief Description of the Drawings, being deleted. No new matter is introduced.

The specification is amended at the paragraph beginning on page 23, line 17 to correct a grammatical error. No new matter is introduced.

Comment

Applicant does not agree with one or more comments in the Response to Arguments section of the instant Office Action. For instance, in the Office Action with respect to cited references, it is stated that "both disclose forming an amorphous carbon film and inherently it would have the same extinction coefficient at the same wavelength because they have the same structure (or lack thereof)." Neither the cited references or objective evidence has been provided in the Office Action that teaches or suggests that the amorphous carbon film of the cited references have the same structure. Applicant notes that a determination that amorphous carbon films have different extinction coefficients at the same wavelength is an indication that there are structural differences between the amorphous carbon films. See, for example Figure 5 of the primary reference, He et al., in which amorphous carbon films formed with different process parameters have different extinction coefficients at the same wavelength and structural differences as discussed in He. Applicant submits that the cited Fairbairn et al. reference (see column 6, lines 55-59), along with the He et al. reference, supports Applicant's position.

Further, Applicant traverses the use of inherency as applied in the Office Action, since it has not been established that the cited references form amorphous carbon films with the same structure. Applicant respectfully submits that a *prima facie* case of inherency has not established in the Office Action. MPEP § 2112 recites that "In relying upon the theory of inherency, the examiner must provide basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art," citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

However, Applicant has limited the following discussion of the traversal of the Office Action rejections to such discussion as is necessary to efficiently expedite the prosecution of the abovementioned application.

Claim Objections

Claim 2 was objected to for informalities. Applicant traverses these grounds of rejection of this claim.

In the Office Action, it is stated that "the examiner does not understand "spreading gas containing nitrogen to radio frequency to spread a plasma." Claim 2 recites, in part, "subjecting the process gas and a spreading gas containing nitrogen to radio frequency energy to spread a plasma over the wafer for the semiconductor structure." Applicant respectfully requests an explanation regarding any misunderstanding in claim 2, where the process gas introduced in claim 1 and a spreading gas containing nitrogen is subjected to radio frequency energy to spread a plasma over the wafer for the semiconductor structure. However, Applicant amends claim 2 to further clarify the claim.

Applicant respectfully requests withdrawal of this objection of claim 2, and reconsideration and allowance of this claim.

First §103 Rejection of the Claims

Claims 1-12, 14-25, 27-34, 37-40, 51-58 and 61 were rejected under 35 U.S.C. § 103(a) as being unpatentable over He et al. ("Characterization and optical properties of diamondlike carbon prepared by electron cyclotron resonance plasma," page 1055, March 1999) in view of

Fairbairn et al. (U.S. 6,841,341). Applicant traverses these grounds of rejection of these claims for at least the reasons made of record.

Applicant reserves the right to swear behind Fairbairn et al. (hereafter Fairbairn) at a later date.

Applicant cannot find in the combination of He et al. (hereafter He) and Fairbairn, as proffered in the Office Action, a teaching or a suggestion of a method that includes forming an amorphous carbon layer for a semiconductor device structure including introducing a carbon-containing process gas and a spreading gas of helium or a nitrogen containing gas composition over a wafer to form the amorphous carbon layer having an extinction coefficient between about 0.001 and about 0.15 at a wavelength of 633 nanometers as recited in claim 1. A spreading gas, as discussed in the specification of the instant application on page 21, lines 15-16, for example, spreads a process gas across a wafer being processed to uniformly grow a material layer. In the Office Action, it is stated with respect to Fairbairn that "the use of He to control the deposition would read on the use of He as a spreading gas. The applicant is reminded that Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure." Applicant submits that the language "use of He" with respect to the combination of He and Fairbairn is broader than "a spreading gas of helium or a nitrogen containing gas composition" recited in claim 1 in light of the specification of the instant application. Applicant submits that use of broad language in a reference does not *per se* make obvious a feature having limitations narrower than taught in the broad language. Applicant cannot find in the combination of He and Fairbairn a teaching or suggestion of a method that uses Helium as a spreading gas to form an amorphous carbon layer having an extinction coefficient between about 0.001 and about 0.15 at a wavelength of 633 nanometers. Claim 1 is amended to further clarify the features recited in claim 1.

In the Office Action with respect to claims 1-7 and 10, it is stated that

> He et al. teaches a spreading gas of argon (Ar) but does not disclose other gas mixtures. Fairbairn et al. (US 6,841,341) teaches using nitrogen (N_2), ammonia (NH_3), Ar mixed with N_2, or helium (He) as a spreading gas [column 6, lines 1-10]. It would have been obvious to one of ordinary skill in the art to use the spreading gases of Fairbairn et al. in the method of He et al. since Fairbairn et al. teaches that these are equivalent material choices to Ar when forming an amorphous carbon layer.

Applicant disagrees. As discussed above, He, Fairbairn, and the combination of He and Fairbairn are void of a teaching or a suggestion of a spreading gas as recited in claim 1. Fairbairn at column 6, lines 1-12 recites:

> C_xH_y, where x has a range of between 2 and 4 and y has a range of between 2 and 10. For example, propylene (C_3H_6), propyne (C_3H_4), propane ($C_{3\ 8}$), butane (C_4H_{10}), butylene (C_4H_8), butadiene (C_4H_6), or acetelyne (C_2H_2) as well as combinations thereof, may be used as the hydrocarbon compound. Similarly, a variety of gases such as hydrogen (H_2), nitrogen (N_2), ammonia (NH_3), or combinations thereof, among others, may be added to the gas mixture, if desired. Ar, He, and N_2 are used to control the density and deposition rate of the amorphous carbon layer. The addition of H_2 and/or NH_3 can be used to control the hydrogen ratio of the amorphous carbon layer, as discussed below.

Applicant submits that the above quote, also referenced in the Office Action, indicates that the additive gases are not equivalent material choices since some of the additive gases control density and deposition and other additive gases control hydrogen ratio. Further, as with He, Applicant cannot find in Fairbairn a teaching or a suggestion of a method that includes the use of a spreading gas as recited in claim 1 of the instant application. Since He does not teach or suggest a spreading gas as recited in claim 1 and Fairbairn does not teach or suggest a spreading gas as recited in claim 1, then the combination of He and Fairbairn does not teach or suggest a spreading gas as recited in claim 1. In addition, no reference or objective evidence has been provided in the Office Action that teaches or suggests the features of claim 1 that are missing in both He and Fairbairn. Therefore, Applicant submits that the combination of He and Fairbairn does not teach or suggest all the elements of claim 1 and that claim 1 is patentable over He in view of Fairbairn.

For at least reasons similar to those discussed above with respect to claim 1, Applicant submits that independent claims 14, 27, 42, and 51 are patentable over He in view of Fairbairn. Further, Applicant submits that claims depend from claims 1, 14, 27, 42, and 51 are patentable over He in view of Fairbairn for at least the reasons discussed herein.

Applicant respectfully requests withdrawal of these rejections of claims 1-12, 14-25, 27-34, 37-40, 51-58 and 61, and reconsideration and allowance of these claims.

Second §103 Rejection of the Claims

Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over He et al. in view of Sudijono et al. (U.S. Publication No. 2004/0092098).

Applicant reserves the right to swear behind Sudijono et al. (hereafter Sudijono) at a later date.

As discussed above with respect to claim 1, Applicant submits that He alone and the combination of Fairbairn with He do not teach or suggest a method including introducing a carbon-containing process gas and a spreading gas of helium or a nitrogen containing gas composition over a wafer, where the spreading gas spreads the process gas across the wafer to form a uniform amorphous carbon layer having an extinction coefficient between about 0.001 and about 0.15 at a wavelength of 633 nanometers, as recited in claim 1. Application submits that the combination of Sudijono with He, as proffered in the Office Action, does not cure the deficiencies of citing He and the combination of He with Fairbairn with respect to claim 1. Therefore, Applicant submits that claim 1 is patentable over He in view of Sudijono.

Claim 13 depends on claim 1. Thus, Applicant submits that claim 13 is patentable over He in view of Sudijono.

Applicant respectfully requests withdrawal of these rejections of claim 13, and reconsideration and allowance of this claim.

Third §103 Rejection of the Claims

Claims 26 and 41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over He et al. and Fairbairn et al. as applied to claim 14 and 17 above, and further in view of Sudijono et al.

As discussed above with respect to claim 14, Applicant submits that the combination of He and Fairbairn does not teach or suggest a method including flowing a spreading gas of helium or a nitrogen containing gas composition, where the spreading gas spreads the process gas containing carbon across a wafer to form a uniform amorphous carbon layer, as recited in claim 14. Application submits the combination of Sudijono with He and Fairbairn, as proffered in the Office Action, does not cure the deficiencies of citing the combination of He and Fairbairn with respect to claim 14. Therefore, Applicant submits that claim 14 is patentable over He and

Fairbairn in view of Sudijono. For at least reasons similar to those discussed above, Applicant submits that claim 27 is patentable over He and Fairbairn in view of Sudijono.

Claims 26 and 41 depend on claims 14 and 27, respectively. Thus, Applicant submits that claims 26 and 41 are patentable over He and Fairbairn in view of Sudijono.

Applicant respectfully requests withdrawal of these rejections of claims 26 and 41, and reconsideration and allowance of these claims.

Fourth §103 Rejection of the Claims

Claims 35, 36, 42-50, 59 and 60 were rejected under 35 U.S.C. § 103(a) as being unpatentable over He et al. in view of Fairbairn et al. and Zhou et al ("Deposition and properties of a-C:H films on polymethyl methacrylate by electron cyclotron resonance microwave plasma chemical vapor deposition method," page 273, 2000). Applicant traverses these grounds of rejection of these claims.

In the Office Action, it is stated that "Zhou et al. teaches a method forming an amorphous carbon layer for an integrated circuit memory structure." Applicant submits that combining Zhou with He and Fairbairn, as proffered in the Office Action, does not cure the deficiencies of applying He and Fairbairn to claims 27 and 57 as discussed above. Therefore, Applicant submits that claims 27 and 57 are patentable over He in view of Fairbairn in further view of Zhou. For at least reasons similar to those stated above with respect to claims 27 and 57, Applicant submits that claim 42 is patentable over He in view of Fairbairn in further view of Zhou. Claims 35 and 36, claims 41-50, and claims 59 and 60 depend on claims 27, 42, and 57, respectively, and are patentable over He in view of Fairbairn in further view of Zhou for at least the reasons discussed herein.

Applicant respectfully requests withdrawal of these rejections of claims 35, 36, 42-50, 59 and 60, and reconsideration and allowance of these claims.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 371-2157 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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By their Representatives,

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Date 6 September 2006 By _____
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 6 day of September 2006.

KATE GANNON _____
Name Signature